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title. 연습문제 2-2 date.

#3-(a) $\lim_{x\to 0}\left(1+\frac{x}{3}\right)^{\frac{1}{x}} = \lim_{x\to 0}\left(1+\frac{x}{3}\right)^{\frac{3}{x}\times 3}$

$\underset{h=\frac{x}{3}}{=} \lim_{h\to 0}\left\{(1+h)^{\frac{1}{h}}\right\}^3$

$= e^3$ #

#3-(b) $\lim_{x\to\infty}\left(1+\frac{2}{x}\right)^{3x} = \lim_{x\to\infty}\left(1+\frac{2}{x}\right)^{\frac{x}{2}\times 6}$

$\underset{t=\frac{x}{2}}{=} \lim_{t\to\infty}\left\{\left(1+\frac{1}{t}\right)^t\right\}^6$

$= e^6$ #

#3-(c) $\lim_{x\to 0}\frac{\ln(1+3x)}{x} = \lim_{x\to 0}\ln(1+3x)^{\frac{1}{x}}$

$= \lim_{x\to 0}\ln(1+3x)^{\frac{1}{3x}\times 3}$

$\underset{t=3x}{=} \lim_{t\to 0}\ln\left\{(1+t)^{\frac{1}{t}}\right\}^3$

$= \ln e^3$

$= 3$ #